REMARKS

Applicants appreciate the thorough examination of the present application that has been provided by the new Examiner. Applicants also appreciate the indication, by the Examiner and the Supervisory Patent Examiner, that all of the earlier rejections under 35 USC §101 and §103 have been withdrawn in view of the arguments made by Applicants in their Appeal Brief.

In response to the new rejection, Applicants have carefully studied the newly cited Catena et al. reference (OH&S Canada, September/October 1992, volume 8, issue 5, pages 72-78). However, Applicants respectfully submit that the claimed invention relates to methods, systems and computer program products for conducting a Process Hazard Analysis (PHA) in a data processing system, whereas Catena et al. relates to the creation of intelligent Piping and Instrument Diagrams (PIDs). As will be described in detail below, intelligent PIDs may be used as inputs for a PHA, but they are not themselves a PHA. Moreover, many of the claim recitations of the independent and dependent claims are simply not described or suggested by Catena et al., taken alone or in combination with the previously cited Herrington reference (Process Safety Progress, Volume 15, 1996, pp. 110-113). Accordingly, Applicants respectfully request reconsideration of the rejection of the pending claims and allowance of the present application for the reasons that will be described in detail below.

<u>Independent Claims 87, 92 and 97 Are Patentable Over Catena et al.</u>

As noted by the Official Action, independent Claims 87, 92 and 97 are method, data processing system and computer program analogs of one another. Accordingly, Claim 87 will be analyzed as representative.

Claim 87 relates to:

> A method of conducting a process hazard analysis (PHA), comprising the following steps that are performed in a data processing system....

As noted in the present application, for example at Page 2, lines 15-21:

> Process Hazard Analysis (PHA) is generally defined as an organized effort to identify and evaluate hazards associated with chemical processes and operations to enable their control. This review normally involves the use of qualitative techniques to

> identify and assess the significance of chemical hazards, from which action plans and appropriate recommendations are developed. Occasionally, quantitative methods are used to help prioritize and analyze risk reduction.

In sharp contrast, Catena et al. relates to the creation and using of "intelligent piping and instrument diagrams (PIDs)." As described in Catena et al., PIDs are diagrams that identify piping in a chemical plant, and the interconnection of these pipings. Intelligent PIDs can store piping and instrument diagrams in a computer, and can allow the user to "click" on a pipe or instrument in the diagram to obtain other information concerning the pipe or instrument, such as the specifications thereof.

As clearly noted in Catena et al., PIDs can be used as an input to a PHA. However, creating and using a PID does not itself conduct a PHA. For example, the very first paragraph of Catena et al. states:

> A new technique using computer drawn "intelligent" piping and instrument diagrams (PIDs) can make a process hazard analysis less expensive, more accurate and easier to perform. It also provides lasting benefits to the plan owner long after the analysis has been completed.

The fourth through sixth paragraphs of Catena et al. elaborate on the design and use of PIDs:

> At any processing operation, accurate, and field verified piping and instrument diagrams are essential to permit a meaningful process hazard analysis (PHA) or emission release to be done. Today accurate PIDs often don't exist. Many companies that have started to update their old PIDs have found the process to be far more difficult, time consuming and expensive than they ever imagined.
>
> Often a process hazard analysis can't be done because existing piping and instrument diagrams are out of date. Practically every operating plant has made minor and major modifications and improvements over time. Some of these occurred during construction or start-up, and others have occurred during years of operation. Although PIDs are critical during the planning phase of construction, they are seldom updated to reflect later design and process changes. Once a plant has been in service for 10 or more years, the diagrams are almost always inaccurate, and in some cases virtually useless. Often diagrams do not even exist for older plants.
>
> An intelligent piping and instrument diagram is a computer drawing file created on a computer aided design (CAD) system that is electronically "linked" to a relational database. This database can hold a thorough description of every item of

> equipment shown on the PID, such as component performance, sizing data, operating data, purchasing data or even PHA results.

This passage makes it clear that an accurate PID may be a desired or even necessary input to conduct a PHA, but generating a PID is not the same as conducting a PHA on a process that is depicted by a PID(s). Stated again, the location and configuration of pipes and instruments in a chemical plant may be a necessary input for a process hazard analysis, but the location and other information about piping and instrumentation does not itself conduct a process hazard analysis.

The first and second steps of Claim 87 are:

> selecting a chemical process to be evaluated;
> selecting a study type to be performed on the chemical process....

The Official Action states, in the middle of Page 5, that the above-quoted passage of Catena et al. anticipates these steps. However, as was described above, this passage states it may be desirable to have an accurate and field verified piping and instrument diagram to permit meaningful PHA to be done, but this passage does not describe or suggest that a specific chemical process is selected for evaluation and a particular study type to be performed on the chemical process is selected. Specifically, the statement cited from Catena et al. that "[a]t any processing operation, accurate, and field verified piping and instrument diagrams are essential to permit a meaningful process hazard analysis (PHA) or emission release to be done" does not describe or suggest selecting a chemical process to be evaluated and selecting a study type to be performed on the chemical process, as recited in Claim 87. Stated differently, the fact that piping and equipment depicting a process are shown on a PID does not suggest selecting a process to be evaluated (for example, based on a list of known processes at a plant site, chemicals involved, quantities, potential hazards, etc.) and then selecting a study type to be performed on the chemical process that was selected, as recited in Claim 87.

The third step of Claim 87 is:

> conducting the selected study type on the chemical process in the data processing system, wherein the chemical process is evaluated in the data processing system for the presence of a hazard scenario....

The Official Action cites Page 74, column 2, lines 5-15 of Catena et al. as allegedly anticipating this step. However, this passage of Catena et al. describes the gathering

of existing PIDs; drawing computer aided designs of PIDs; selecting database, design and configuration; reviewing and updating final PIDs; and maintaining the database and updating the diagrams. Thus, this passage describes how to generate a PID, but does not describe or suggest conducting a PHA in a data processing system.

The fourth step of Claim 87 is:

> generating a resolution plan to the hazard scenario in the data processing system, wherein the resolution plan comprises a final action item, at least one interim action item to be completed prior to the completion of the final action item and at least one target date for completing an action item....

The Official Action cites Catena et al. Page 74, column 2, lines 41-45, and specifically the sentence that states:

> Rearrangement of the diagrams in process-flow order can be done without too much difficulty, if planned for in advance.

This sentence does not describe or suggest generating a resolution plan, a final action item, an interim action item, target dates or any other recitations of the fourth step of Claim 87.

Finally, the fifth step of Claim 87 is:

> tracking the resolution plan in the data processing system, to monitor for completion of action items, wherein the status of the resolution plan is monitored for completion of action items by the target date.

The Official Action cites Catena et al. Page 75, column 2, last four lines, which states:

> The amount of time required to produce a complete field-verified, intelligent piping and instrumentation diagram has ranged from 20 to more than 80 hours per drawing.

This sentence states how much time it takes to produce a field-verified PID. It does not say anything about tracking, monitoring, target dates or any of the other recitations of the final (fifth) step of Claim 87.

For at least these reasons, independent Claims 87, 92 and 97 are neither anticipated by, nor obvious in view of, Catena et al.

Many Of The Dependent Claims Are Separately Patentable

The dependent claims are patentable at least per the patentability of independent Claims 87, 92 or 97 from which they depend. Moreover, many of the dependent claims are separately patentable.

In particular, Claims 6, 29, 31, 51 and 53 relate to creating an initial study of the chemical process. These claims were rejected at the top of Page 7 of the Official Action based on the language of Catena et al., "[c]reating and using intelligent piping and instrument diagrams of refineries and chemical plants isn't just good planning, it's good safety." The Official Action states, "[t]he concept of 'creating' indicates an initial study." However, creating intelligent piping and instrument diagrams does not constitute the claimed "initial study of the chemical process." Moreover, Claims 35 and 57 relate to customizing the study type. The Official Action does not appear to cite any passage of Catena et al. that relates to customizing.

Claims 5, 7, 32 and 54 were rejected in the middle of Page 7 "in that each pipe can be considered a node." However, even though "a pipe is a segment in a pipeline," as noted in the middle of Page 7 of the Official Action, a pipe in a PID does not correspond to the step of "dividing the process into nodes," as recited in Claims 7, 32 and 54. Moreover, Claim 5 recites that the study type is a "revalidation study of the chemical process." The Official Action does not appear to cite any passage of Catena et al. that relate to these claim recitations.

Claim 10 recites "customizing the study type prior to the conducting step." The Official Action states that this claim is anticipated based on the following sentence of Catena et al.:

> The major steps of a piping and instrumentation diagram update are: determining intelligent PID standards and data definition.

Respectfully, this sentence does not describe or suggest customizing.

Claims 28, 30, 50 and 52 relate to conducting a "revalidation study of the chemical process." In the paragraph bridging Pages 7 and 8 of the Official Action, these claims were rejected based on a sentence of Catena et al. that states:

> Many companies that have started to update their old PIDs have found the process far more difficult, time consuming and expensive than they ever imagined.

However, updating a drawing of pipes does not describe or suggest a revalidation study of a chemical process, as recited in these claims.

Claim 61 is independently patentable as reciting a resolution plan comprising more than one action item. The passage of Catena et al. quoted at the top of Page 8 of the Official Action, related to "hazard and operability analysis (HAZOP), failure mode and effects analysis (FEMA)," does not suggest generating a resolution plan to the hazard scenario comprising more than one action item as recited in Claim 61.

Claims 91, 96 and 101 describe various parameters included in the resolution database, including names of persons responsible for carrying out the resolution plan, departments responsible for carrying out the resolution plan, sites at which the resolution plan will be carried out, target dates for completion of the resolution plan, completed action items and uncompleted action items. These claims were rejected under 35 USC §103(a) based on Catena et al. in view of the previously cited Herrington article. The Official Action concedes, at the bottom of Page 10, that the primary reference Catena et al. is silent on these recitations. Moreover, the mere fact that Herrington describes a team-based approach for mechanical integrity implementation does not describe or suggest the recitations of these claims. Finally, as was already noted, Catena et al. relates to the creation of piping and instrument diagrams, whereas Herrington relates to creation of a mechanical integrity program. Therefore, it would not be obvious to combine these references and, even they were combined, the recitations of these claims would not be described or suggested. Accordingly, the recitations of Claims 91, 96 and 101 are not described or suggested by Catena et al. and/or Herrington.

For at least the reasons described above, many of the dependent claims are separately patentable.

Conclusion

Applicants again thank the Examiner and the Supervisory Patent Examiner for withdrawing all of the prior rejections. However, Applicants have shown above that the claims are not described or suggested by Catena et al., taken alone or in combination with Herrington. Respectfully, as was shown above, Catena et al. relates to an intelligent piping diagram, which can be one of many inputs used in performing

a process hazard analysis. However, the snippets of Catena et al. that were quoted in the Official Action do not describe or suggest the recitations of the claims, as was analyzed in detail above. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the present application.

Respectfully submitted,

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Susan E. Freedman
Date of Signature: May 17, 2006